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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TORRES, JUAN A

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/062,622

Applicant(s)

SINTONEN, JYRI

Examiner

Juan A. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 4,5 and 15-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

- a) In page 5 line 17 the recitation "receiver 108" is improper; it is suggested to be changed to "receiver 106".
- b) In page 5 line 24 the recitation "receiver 108" is improper; it is suggested to be changed to "receiver 106".
- c) In page 5 line 28 the recitation "receiver 108" is improper; it is suggested to be changed to "receiver 106".
- d) In page 8 line 15 the recitation "216" is improper; it is suggested to be changed to "214".
- e) In page 8 line 37 the recitation "BCD" is improper; it is suggested to be changed to "Binary Coded Decimal (BCD)".

Appropriate correction is required.

Claim Objections

Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The recitation in claim 1 “second digital filter having a second filter input coupled with the digital signal” indicates, that the first and second filters are connected in parallel because they have the same input.

Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The recitation in claim 1 “the amplification level of the amplifier being set by an amplifier control signal” indicates, that the amplifier is an automatic gain control amplifier.

Claim 15 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The recitation in claim 12 “a second filtering module for digitally filtering the digital signal at a second interference attenuation factor”, indicates that the first and second filters are connected in parallel because they have the same input.

Claim 16 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The recitation in claim 12 "adjusting the amplification level", indicates that the amplifier is and automatic gain control amplifier.

Claim 17 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The recitation in claim 12 "a conversion module for converting the amplified signal to a digital signal" indicates that this module is an analogue to digital converter.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 3, the recitation in lines 17-18 of claim 1 "second digital filter having a second filter input coupled with the digital signal" indicates, that the first and second filters have the same input, so they are connected in parallel. Claim 3 recited that they

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are connected in series, this is vague and indefinite how to connect something in series if it is connected in parallel.

As per claim 14, the recitation in lines 18-19 of claim 1 "second digital filter having a second filter input coupled with the digital signal" indicates, that the first and second filters have the same input, so they are connected in parallel. Claim 3 recited that they are connected in series, this is vague and indefinite how to connect something in series if it is connected in parallel.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 5, 7-13, 15-17 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Moriyama (US 6314144).

As per claim 1 Moriyama discloses a receiver circuit for adjusting the headroom for a received signal in a radio receiver, the received signal including a target signal and an interference signal, the circuit comprising: an amplifier coupled with the received signal such that the amplifier outputs an amplified signal, the amplification level of the amplifier being set by an amplifier control signal (figure 3 block 32 column 6 line 12); an analog-to-digital converter coupled with the amplified signal, the analog-to-digital

converter outputting a digital signal where the digital signal is a digital representation of the amplified signal (figure 3 block 11-2 column 6 line 19-21); a first digital filter having a first filter input coupled with the digital signal, the first digital filter filters the digital signal at a first interference attenuation factor to produce a first filter output coupled with the amplifier control signal, the first filter output being proportional to the magnitude of the interference signal when the interference signal is greater in magnitude than the target signal (figure 3 block 12-3 column 2 lines 26-37 and column 6 lines 37-48); and a second digital filter having a second filter input coupled with the digital signal, the second digital filter filters the digital signal at a second interference attenuation factor (figure 3 block 12-2 column 6 lines 54-58).

As per claim 2 Moriyama discloses the first digital filter and the second digital filter are low-pass digital filters (figure 3 blocks 12-2 and 12-3 are after block 10-2 LPF and they operate in baseband signals, so they are LPF column 6 lines 18-21).

As per claim 4 Moriyama discloses that the first digital filter and the second digital filter are arranged in parallel circuit (figure 3 blocks 12-2 and 12-3 column 6 lines 33-43).

As per claim 5 Moriyama discloses that the amplifier is an automatic gain control amplifier (figure 3 block 19 column 6 lines 44-48).

As per claim 7 Moriyama discloses that the first filter output is proportional to the magnitude of the target signal when the target signal is greater in magnitude than the interference signal (figure 26 column 3 line 60 to column 4 line 6).

As per claim 8 Moriyama discloses that the second attenuation factor is greater than the first attenuation factor (figure 3 blocks 12-2 and 12-3 column 3 lines 1-4).

As per claim 9 Moriyama discloses a method for adjusting the headroom for a received signal in a radio receiver, the received signal including a target signal and an interference signal, the method comprising: amplifying the received signal at an amplification level to an amplified signal (figure 3 block 32 column 6 line 12); converting the amplified signal to a digital signal (figure 3 block 11-2 column 6 line 19-21); digitally filtering the digital signal at a first interference attenuation factor to produce a first filter output proportional to the magnitude of the interference signal when the interference signal is greater in magnitude than the target signal (figure 3 block 12-3 column 2 lines 26-37 and column 6 lines 37-48); adjusting the amplification level of the received signal based on the first digital filter output such that the difference between the maximum possible digital signal and the amplified signal is decreased when the interference signal is greater than the target signal (figure 3 block 19 column 6 lines 44-48); and digitally filtering the digital signal at a second interference attenuation factor (figure 3 block 12-2 column 6 lines 54-58).

As per claim 10 Moriyama discloses digitally filtering the digital signal at the first interference attenuation factor such that the first filter output is proportional to the magnitude of the target signal when the target signal is greater in magnitude than the interference signal (figure 26 column 3 line 60 to column 4 line 6).

As per claim 11 Moriyama discloses that the second interference attenuation factor is greater than the first interference attenuation factor (figure 3 blocks 12-2 and 12-3 column 3 lines 1-4).

As per claim 12 Moriyama discloses a system for adjusting the headroom for a received signal in a radio receiver, the received signal including a target signal and an interference signal, the system comprising: an amplification module for amplifying the received signal at an amplification level to an amplified signal (figure 3 block 32 column 6 line 12); a conversion module for converting the amplified signal to a digital signal (figure 3 block 11-2 column 6 line 19-21); a first filtering module for digitally filtering the digital signal at a first interference attenuation factor to produce a first filter output proportional to the magnitude of the interference signal when the interference signal is greater in magnitude than the target signal (figure 3 block 12-3 column 2 lines 26-37 and column 6 lines 37-48); an adjusting module for adjusting the amplification level of the received signal based on the first digital filter output such that the difference between the maximum possible digital signal and the amplified signal is decreased when the interference signal is greater than the target signal (figure 3 block 19 column 6 lines 44-48); and a second filtering module for digitally filtering the digital signal at a second interference attenuation factor (figure 3 block 12-2 column 6 lines 54-58).

As per claim 13 Moriyama discloses that the first filtering module and the second filtering module are low pass digital filters (figure 3 blocks 12-2 and 12-3 are after block 10-2 LPF and they operate in baseband signals, so they are LPF column 6 lines 18-21).

As per claim 15 Moriyama discloses that the first filtering module and the second filtering module are arranged in parallel circuit (figure 3 blocks 12-2 and 12-3 column 6 lines 33-43).

As per claim 16 Moriyama discloses that the amplification module is an automatic gain control amplifier (figure 3 block 19 column 6 lines 44-48).

As per claim 17 Moriyama discloses that the conversion module is an analog-to-digital converter (figure 3 block 11-2 column 6 line 19-21).

As per claim 19 Moriyama discloses that the second interference attention factor is greater than the first interference attenuation factor (figure 3 blocks 12-2 and 12-3 column 3 lines 1-4).

As per claim 20 Moriyama discloses that the first filter output is proportional to the magnitude of the target signal when the target signal is greater in magnitude than the interference signal (figure 26 column 3 line 60 to column 4 line 6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama (US 6314144) as applied to claims 1 and 12 above, and further in view of Turney (US 5389927). Moriyama discloses claims 1 and 12. Moriyama doesn't disclose that the analog-to-digital converter is a sigma-delta analog-to-digital converter. Turney

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discloses an analog-to-digital converter that is a sigma-delta analog-to-digital converter (column 1 lines 51-56). Moriyama and Turney are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the sigma-delta analog-to-digital converter disclosed by Turney with the receiver disclosed by Moriyama. The suggestion/motivation for doing so would have been to use an analog to digital converter that is capable of being gain controlled (Turney column 1 lines 51-56). Therefore, it would have been obvious to combine Moriyama and Turney to obtain the invention as specified in claims 6 and 18

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nishikido (US 6246285) discloses an automatic gain control (AGC) circuit based on a peak detection system having two filters, a voltage comparator selects one of two voltages and compares the selected voltage with a detection signal output from a wave detector. A second AGC filter selects a cut-off frequency based on the result of comparison of the voltage comparator and supplies a signal resulting from low-pass filtering, based on the selected cut-off frequency, to a voltage-controlled amplifier as a control voltage. Malone (US 6392830) discloses a system and method for providing nonadjacent redundancy synchronization bytes and in FIG. 7 presents a PRML that includes a VGA (270) an ADC (274) and a digital filter (276), the output of the digital filter control the gain of the VGA. Kang (US 6370133) discloses a CDMA receiver, which uses digital filters in combination with noise cancellation circuitry to

attenuate highly correlated signals. Lindoff (US 20050047534 A1) discloses a method and system are described for processing a received signal at a receiver in a communication system; the receiver includes a digital filter and automatic gain control means; the gain and filtering parameters of the receiver are set according to the received information; the received signal is processed at the receiver using the gain and filtering parameters. Nishikido (US 6246285 B1) discloses an automatic gain control (AGC) circuit based on a peak detection system having two filters in a series configuration, a voltage comparator selects one of two voltages and compares the selected voltage with a detection signal output from a wave detector. A second AGC filter selects a cut-off frequency based on the result of comparison of the voltage comparator and supplies a signal resulting from low-pass filtering, based on the selected cut-off frequency, to a voltage-controlled amplifier as a control voltage.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres
03-28-2005


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SUPERVISORY PATENT EXAMINER